

Message Text

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L-03 NASA-02 NEA-10 NSAE-00 NSC-05 OIC-02 SP-02
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FM USMISSION GENEVA
TO SECSTATE WASHDC PRIORITY 7831
INFO AMEMBASSY BONN
AMEMBASSY LONDON
AMEMBASSY MOSCOW
AMEMBASSY OTTAWA
AMEMBASSY ROME
AMEMBASSY THE HAGUE
AMEMBASSY TOKYO
USMISSION USNATO

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E.O. 11652: N/A
TAGS: PARM, CCD
SUBJECT: CCD: STATEMENT MADE BY U.S. EXPERT AT INFORMAL
MEETING ON NEW MASS DESTRUCTION WEAPONS; MARCH 30, 1978

1. DURING FINAL MEETING OF INFORMAL MEETINGS OF CCD ON
NEW MASS DESTRUCTION WEAPONS (MDW), MARCH 30, U.S. EXPERT
(HAGENGRUBER) MADE STATEMENT CHALLENGING EXAMPLES OF NEW
MDW AND DISTORTIONS OF SCIENTIFIC FACTS, PARTICULARLY THOSE
SURROUNDING REDUCED BLAST/ENHANCED RADIATION WEAPONS,
ADVANCED BY EASTERN EUROPEAN BLOC DELEGATIONS.

2. TEXT OF U.S. STATEMENT FOLLOWS:

BEGIN TEXT: MR. CHAIRMAN, I HAVE LISTENED WITH INTEREST
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TO THE STATEMENTS PRESENTED BY VARIOUS EXPERTS ON THE TOPIC
OF NEW WEAPONS OF MASS DESTRUCTION. THE UNITED STATES
CONTINUES TO VIEW THIS TOPIC AS BEING WORTHY OF SERIOUS
AND CAREFUL ATTENTION, AND REMAINS COMMITTED TO DEVELOPING
RELIABLE AND EFFECTIVE MEASURES TO AVOID APPLICATION OF
SCIENTIFIC DISCOVERIES TO NEW WEAPONS OF MASS DESTRUCTION.
THE OBSERVATIONS OF A TECHNICAL NATURE WHICH I WILL MAKE

TODAY SHOULD THEN BE SEEN AGAINST THIS BACKGROUND.

AS A GENERAL SUMMARY, I FOUND THAT NONE OF THE INFORMATION PRESENTED, OR A REVIEW OF OTHER AREAS OF CURRENT SCIENTIFIC ACTIVITY, PROVIDE A BASIS FOR IDENTIFICATION OF ANY NEW WEAPON OF MASS DESTRUCTION. SOME MATERIAL WAS PROVIDED ON RADIOLOGICAL AND NUCLEAR WEAPONS. HOWEVER, THESE SYSTEMS HAVE BEEN DESIGNATED MDW FOR THIRTY YEARS. ARGUMENTS WERE MADE TO SUPPORT THREE CANDIDATE NEW WEAPONS OF MASS DESTRUCTION MENTIONED IN THE ANNEX TO THE SOVIET DRAFT CONVENTION. THESE WERE WEAPONS BASED ON INFRA-SOUND ACOUSTIC WAVES, ELECTROMAGNETIC WAVES, AND FLUXES OF CHARGED OR NEUTRAL PARTICLES. WE FIND NO CURRENT BASIS FOR IDENTIFYING ANY OF THESE THREE EXAMPLES AS A WEAPON OF MASS DESTRUCTION.

AS DR. BUCHHEIM, THE U.S. EXPERT AT LAST YEAR'S CCD INFORMALS ON THIS TOPIC SAID, "WE WOULD EXPECT THE EMERGENCE OF A NEW WEAPON OF MASS DESTRUCTION TO BE A RARE EVENT." IT IS NOT SURPRISING, AND CERTAINLY NOT DISAPPOINTING TO ME AS A PHYSICIST THAT THE IMPRESSIVE SCIENTIFIC PROGRESS IN THE PAST 30 YEARS HAS NOT PRODUCED ONE. THE DISCUSSIONS OF THE PAST WEEK HAVE NOT CAUSED ME TO CHANGE THAT OBSERVATION.

REMARKS HAVE BEEN MADE HERE THAT IMPLIED THAT NEW
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WEAPONS OF MASS DESTRUCTION WILL APPEAR WITHIN A FEW YEARS AFTER A NEW SCIENTIFIC DISCOVERY. THIS RAPID DEVELOPMENT CYCLE IS FREQUENTLY TRUE FOR ENGINEERING MODIFICATIONS OR IMPROVEMENTS IN TECHNOLOGIES BASED ON RECOGNIZED AND WELL UNDERSTOOD PRINCIPLES OF SCIENCE. HOWEVER, THE ADAPTION OF A TRULY NEW SCIENTIFIC PRINCIPLE OR REVOLUTIONARY DISCOVERY TO A PRACTICAL USE WILL GENERALLY TAKE MANY YEARS AND CONSIDERABLE VISIBLE EFFORT. THIS IS OBVIOUS IN THE CASE OF PEACEFUL APPLICATION OF FUSION POWER WHERE, ALTHOUGH THE SCIENTIFIC PRINCIPLE AND ITS APPLICATION TO ENERGY GENERATION HAVE BEEN WELL UNDERSTOOD FOR DECADES, PRACTICAL ACHIEVEMENT OF THIS GOAL IS NOT YET GUARANTEED.

FOR WEAPONS OF MASS DESTRUCTION BASED ON NOW UNKNOWN SCIENTIFIC PRINCIPLES OR VARIATIONS OF EXISTING PRINCIPLES, I BELIEVE WE CAN EXPECT AMPLE TIME TO IDENTIFY AND DEAL WITH ANY POTENTIAL RISK.

IN REVIEWING THE THREE SPECIFIC EXAMPLES, AND THE INFORMATION PRESENTED BY VARIOUS EXPERTS, I AM DISTURBED BY A FUNDAMENTAL DISTORTION WHICH COULD, IF IT IS CONTINUED, THREATEN TO SO CONFUSE AND MISDIRECT WORLD CONCERN

ABOUT WEAPONS OF MASS DESTRUCTION THAT PROPER VIGILANCE AND
ATTENTION ON THIS ISSUE MIGHT BECOME IMPOSSIBLE.
LABORATORY EXPERIMENTAL DATA, IN SOME CASES REASONABLY
FACTUAL, HAVE BEEN HYPOTHETICALLY EXTENDED TO MAKE THEM
SEEM EQUALLY VALID OVER WIDE AREAS AND LARGE POPULATIONS.
THE ASSUMPTIONS MADE TO ALLOW THIS HYPOTHETICAL EXTENSION
ARE NOT JUSTIFIED, AND IN SOME CASES TRULY FICTIONAL.
ON PAPER, ALMOST ANY PHYSICAL PHENOMENON WHICH CAN PRODUCE
DELETERIOUS EFFECTS ON THE HUMAN BODY COULD EQUALLY BE
EXTENDED IN THIS FICTIONAL MANNER TO PROVIDE WIDESPREAD
AND SERIOUS DAMAGE. IT IS THE REAL LIMITS OF SCIENCE AND
TECHNOLOGY WHICH RESTRICT THE PRACTICAL APPLICABILITY OF

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ANY OF THESE PHENOMENA, AND THESE LIMITS CANNOT BE DIS-
MISSED BY HYPOTHETICAL FANTASY, BUT ONLY BY HARD SCIENTIFIC
FACT. OUR ROLE AS EXPERTS IS, I BELIEVE, TO PROVIDE EXPERT
COUNCIL THAT WILL BE RECOGNIZED BY OUR PEERS IN ALL COUNT-
RIES. THE STANDARDS WE SET FOR OUR OWN EXPERIMENTS AND
THEORIES AS SCIENTISTS MUST BE APPLIED EQUALLY IN THIS
FORUM. THIS HAS NOT BEEN THE CASE IN MUCH OF THE MATERIAL
PRESENTED IN THESE MEETINGS.

WE HAVE BEEN DETRACTED FROM OUR RESPONSIBILITIES BY CONTINUED DISCUSSIONS OF THE REDUCED BLAST/ENHANCED RADIATION WEAPON, WHICH SOME DELEGATIONS CALL THE "NUCLEAR NEUTRON WEAPON." UNFORTUNATELY THE REMARKS ON THIS TOPIC ARE IN LARGE PART NOT ONLY INAPPROPRIATE, SINCE IT IS RECOGNIZED BY SCIENTISTS AS A NUCLEAR WEAPON, BUT ALSO SO UNCLASSIFIED

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IRRESPONSIBLE AND SCIENTIFICALLY INACCURATE. I AM SORRY THAT I WILL NEED TO USE VALUABLE TIME TO HELP ESTABLISH A PROPER BALANCE ON THIS ISSUE. BUT BALANCE AND SCIENTIFIC ACCURACY MUST BE RIGOROUSLY MAINTAINED TO ENSURE CREDIBILITY, ABOVE ALL IN A MEETING OF TECHNICAL EXPERTS.

I WOULD LIKE TO LAY OUT SOME RELEVANT TECHNICAL FACTS WHICH I HOPE WILL CLARIFY THIS ISSUE. THERMONUCLEAR OR FUSION REACTIONS ARE, BY THEIR NATURE, MUCH MORE PROLIFIC EMITTERS OF NEUTRONS THAN ARE FISSION REACTIONS FOR THE SAME TOTAL ENERGY OUTPUT. THIS RELATIVE ABUNDANCE OF NEUTRONS IS ADDITIONALLY INCREASED IF COMPARISONS ARE MADE ON THE BASIS OF A FIXED VOLUME OR WEIGHT OF FUEL MATERIAL. IN OTHER WORDS, ONE TERRAJoule OF ENERGY RELEASE FROM A FUSION REACTION IS ACCOMPANIED BY A SIGNIFICANTLY LARGER NUMBER OF NEUTRONS THAN ONE TERRAJoule OF ENERGY RELEASE FROM A FISSION REACTION. A RATHER SIMPLE ANALYSIS WHICH CAN BE DONE BY ANY SCIENTIST WHO UNDERSTANDS THESE PHENOMENA WILL SHOW THAT ANY WEAPON WHICH UTILIZES THE THERMONUCLEAR REACTION FOR A SIGNIFICANT FRACTION OF ITS ENERGY OUTPUT CAN PRODUCE AN ORDER OF MAGNITUDE MORE NEUTRONS THAN A PURE FISSION WEAPON OF THE SAME YIELD. THESE NEUTRONS WILL ALSO BE CONSIDERABLY MORE ENERGETIC, HENCE PENETRATING, THAN THOSE RELEASED IN THE FISSION PROCESS.

THERMONUCLEAR WEAPONS, "HYDROGEN BOMBS," ARE SUCH WEAPONS. THEY ARE WIDELY DEPLOYED IN THE NUCLEAR WEAPONS STATES. THEY ARE, IN THE SENSE OF COMPARABILITY WITH FISSION -- OR "ATOMIC" -- BOMBS, ALL ENHANCED RADIATION/REDUCED BLAST WEAPONS, WHAT SOME OTHERS HAVE REFERRED TO AS "NEUTRON BOMBS."

THE RB/ER WEAPON UTILIZES THE THERMONUCLEAR OR FUSION UNCLASSIFIED

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REACTION TO ENHANCE THE RADIATION OUTPUT RELATIVE TO THE ENERGY RELEASED AS BLAST AND HEAT, COMPARED WITH FISSION WEAPONS OF THE SAME YIELD. NO NEW PRINCIPLES OF PHYSICS,

NO DEEP NATURAL MYSTERIES JUST NOW BEING PROBED BY MAN ARE INVOLVED. WE ARE TALKING OF RELATIVELY SMALL--NOT SMALL OR MINATURE WEAPONS BY YIELD STANDARDS OF EXISTING WEAPONS --THERMONUCLEAR WEAPONS. THIS IS A TECHNOLOGY WHICH WAS EXPOSED TO THE WORLD MORE THAN 20 YEARS AGO. THE DECISION TO BE TAKEN ON ITS DEPLOYMENT IS NOT WHETHER A WEAPON HAVING ITS GENESIS IN NEW SCIENTIFIC PRINCIPLES WILL BE DEPLOYED, BUT RATHER WHETHER SOME EXISTING FISSION WEAPONS WILL BE REPLACED BY SMALLER THERMONUCLEAR ONES.

THE ARGUMENT HAS BEEN MADE THAT THE SPECIAL NEUTRON EFFECTS OF THIS WEAPON ARE MORE WIDELY REACHING THAN THOSE OF EXISTING NUCLEAR WEAPONS. THIS ARGUMENT IS FALSE. ALL THERMONUCLEAR WEAPONS WILL PRODUCE QUALITATIVELY THE SAME RADIATION EFFECTS. THE EXTENT OF THESE EFFECTS WILL VARY ONLY WITH THE YIELD OF THE WEAPON AND CONDITIONS OF THE DETONATION, AND EVEN THEN THE RELATIVE EFFECTS DO NOT SCALE UPWARD -- EVEN AS A MODEST FUNCTION OF YIELD -- BECAUSE THE ATTENUATION LENGTH FOR NEUTRONS IN AIR IS LESS THAN 300 METERS. THIS MEANS THAT THE REDUCED BLAST/ENHANCED RADIATION CONDITION, WITH RESPECT TO COLLATERAL DAMAGE, APPLIES ONLY OVER A RANGE OF RELATIVELY SMALL YIELDS. THIS IS WHY, OF COURSE, NOT ALL THERMONUCLEAR WEAPONS ARE CALLED AS RB/ER WEAPONS. THE CONDITION ONLY APPLIES FOR A VERY SPECIFIC SITUATION AND YIELD.

ANOTHER ARGUMENT HAS BEEN MADE THAT THIS WEAPON IS A QUALITATIVE DIFFERENT NUCLEAR WEAPON WHICH FOCUSES ON KILLING PEOPLE WHILE SPARING MATERIAL OBJECTS. NOT ONLY IS THIS ARGUMENT EQUALLY SPURIOUS, BUT ALSO RATHER MYSTIFYING SINCE I AM HARD PUT TO IDENTIFY MANY WEAPONS WHOSE PRIMARY

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FUNCTION IS NOT DAMAGE OR DEATH TO HUMAN BEINGS. CERTAINLY ALL NUCLEAR WEAPONS, BUT EVEN RIFLE BULLETS MEET THIS CRITERION. THE CONCERN ABOUT COLLATERAL DAMAGE MENTIONED IN CONNECTION WITH THIS WEAPON, IS, AS IS MOST FREQUENTLY THE CASE, THE CONCERN OVER UNINTENDED DIRECT AND INDIRECT DAMAGE TO PEOPLE OUTSIDE THE IMMEDIATE TARGET AREA.

WE HAVE ALSO HEARD REFERENCE TO INDUCED RADIATION. THIS EFFECT WOULD BE THE SAME AS THAT PRODUCED FOR OTHER THERMONUCLEAR WEAPONS OF SIMILAR YIELD. FURTHER, THIS EFFECT WOULD BE VERY SHORT-LIVED, AND VASTLY SMALLER AND LESS PERVASIVE, THAN THE FALLOUT EFFECTS OF EITHER FISSION OR FUSION WEAPONS WITH THE SAME YIELD.

TO THE EXTENT THAT EVERY CHANGE IN EXISTING NUCLEAR
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WEAPON STOCKPILES IS A MEANINGFUL TOPIC AND STIMULUS FOR THE CONTINUED DISCUSSION OF NUCLEAR WEAPONS, THIS WEAPON IS ALSO. THAT DISCUSSION WOULD BE IN AN APPROPRIATE FORUM DEALING WITH NUCLEAR WEAPONS, A RECOGNIZED AND EXTREMELY DANGEROUS EXISTING CATEGORY OF WEAPONS OF MASS DESTRUCTION, AND IT WOULD ALSO BE APPROPRIATE THEN TO DISCUSS OTHER NEW NUCLEAR WEAPONS SUCH AS THE NEW TYPES DEPLOYED BY THE SOVIET UNION IN THE PAST SEVERAL YEARS -- THE SS-20 AS A SPECIFIC EXAMPLE.

THE CCD HAS ESTABLISHED A WORKABLE APPROACH TO KEEPING UNDER REVIEW POTENTIAL DEVELOPMENT OF NEW WEAPONS OF MASS DESTRUCTION BASED ON NEW SCIENTIFIC PRINCIPLES. A REGULAR REVIEW OF THIS ISSUE COINCIDENTAL WITH MEETINGS OF THE CCD ENHANCES THE IMMEDIATE VALUE OF EXPERT DISCUSSIONS. THE FREQUENCY OF OUR REVIEW PROCESS IS GREATLY FACILITATED BY THE REGULAR SCHEDULE OF THE CCD WHICH IS WELL PACED WITH RESPECT TO THE ADVANCE OF SCIENCE AND WHICH AFFORDS THEM REGULAR OPPORTUNITIES TO CALL UPON OURSELVES OR OTHER EXPERTS AGAIN.

I BELIEVE THAT WE MUST BE CAREFUL TO APPLY THE APPROPRIATE MEASURE TO ANY SCIENTIFIC DATA WHICH ARE PRESENTED

HERE. THIS MEASURE SHOULD CONTINUE TO BE THE STANDARD OF
COMPARABILITY IN DESTRUCTIVE EFFECTS WITH RECOGNIZED
CATEGORIES OF WEAPONS OF MASS DESTRUCTION. TO DO LESS
WOULD DEPRECIATE THE AWESOME SIGNIFICANCE OF THE TERM
"WEAPON OF MASS DESTRUCTION." WE MUST ALSO DEAL WITH SCI-
ENCE WITH THE KNOWLEDGE AND ACCURACY EXPECTED OF US AS
EXPERTS AND AVOID THE FAULTY LOGIC TOO OFTEN PRESENT THIS
PAST WEEK. TO CLOUD OR DISTORT THIS IMPORTANT DISCUSSION
WITH MISUSE OR MISUNDERSTANDING OF SCIENCE WOULD JEOPARDIZE
THE SIGNIFICANT ROLE ASSIGNED TO US AND PUT US ON RECORD
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AS PREFERRING PROPAGANDA TO SCIENTIFIC FACT.

THANK YOU, MR. CHAIRMAN. END TEXT
VANDEN HEUVEL

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